CLAIMS

1. A composite structure comprising a polytetrafluoroethylene porous layer (A1), a polytetrafluoroethylene porous layer (A2), and a framework structural member having a plurality of gaps or openings, the framework structural member being disposed between the polytetrafluoroethylene porous layers (A1) and (A2), wherein the composite structure is characterized in that:

(1) the polytetrafluoroethylene porous layers (A1) and (A2) are united together by being adhered with each other through the gaps or openings of the framework structural member; and

(2) the respective polytetrafluoroethylene porous layers (A1) and (A2) are united with the framework structural member closely along the surfaces of the respective constituent elements of the framework structural member in such a manner as to wrap the respective elements.

2. A composite structure according to claim 1, wherein the constituent element of the framework structural member is an elastic wire.

3. A composite structure according to claim 2, wherein the composite structure is a tubular structure made of an elastic wire.

4. A composite structure according to claim 3, wherein the tubular structure is radially expandable/shrinkable.

5. A composite structure according to claim 2, wherein the elastic wire is a metal wire.

6. A composite structure according to claim 1, wherein the

polytetrafluoroethylene porous layers (A1) and (A2) are united with the framework structural member through fluoroplastics closely along the surfaces of the respective constituent elements of the framework structural member.

7. A composite structure according to claim 1, wherein the polytetrafluoroethylene porous layers (A1) and (A2) are united with the framework structural member through a nonporous intermediate layer closely along the surfaces of the respective constituent elements of the framework structural member.

8. A method of manufacturing a composite structure comprising a polytetrafluoroethylene porous layer (A1), a polytetrafluoroethylene porous layer (A2), and a framework structural member having a plurality of gaps or openings, wherein the method includes the following Steps 1 through 3:

(A) Step 1 for preparing an intermediate composite material which is formed by sandwiching a framework structural member between the polytetrafluoroethylene porous material layers (A1) and (A2);

(B) Step 2 for applying pressure at least from one outside of the polytetrafluoroethylene porous layers (A1) and (A2) through a mass of fine particles so that the polytetrafluoroethylene porous layers (A1) and (A2) can be adhered not only with each other through the gaps or openings of the framework structural member, but also with the framework structural member closely along the surfaces of the

respective elements of the framework structural member in such a manner as to wrap the respective elements; and

(C) Step 3 for uniting the respective adhered parts by heating at a temperature lower than the pyrolysis temperature of polytetrafluoroethylene in a state where pressure is applied.

9. A method of manufacturing a composite structure according to claim 8, wherein the mass of fine particles do not change in their form under the heat treatment at a temperature lower than the pyrolysis temperature of polytetrafluoroethylene.

10. A method of manufacturing a composite structure according to claim 8, wherein in Step 2, the intermediate composite material is placed in the mass of fine particles, and pressure is applied at least from one outside of the porous polytetrafluoroethylene layers through the mass of fine particles on which the pressure is applied from the outside.

11. A method of manufacturing a composite structure according to claim 8, wherein

in Step 1, the intermediate composite material, in which a porous PTFE layer (A1), a framework structural member, and a porous PTFE layer (A2) are arranged in the enumerated order, is placed on around the circumferential surface of a cylindrical support block, and

in Step 2, in a state in which the intermediate composite material is placed on the circumferential surface of a cylindrical support block, pressure is applied from the outer surface of the polytetrafluoroethylene

porous layer (A2) through the mass of fine particles.

12. A method of manufacturing a composite structure according to claim 8, wherein in Step 1, the framework structural member is sandwiched through fluoroplastics between the polytetrafluoroethylene porous layers (A1) and (A2), and thereby the polytetrafluoroethylene porous layers (A1) and (A2) are united with the framework structural member through fluoroplastics closely along the surfaces of the respective constituent elements of the framework structural member.

13. A method of manufacturing a composite structure according to claim 8, wherein the constituent element of the framework structural member is an elastic wire.

14 A method of manufacturing a composite structure according to claim 13, wherein the framework structural member is a tubular structure.

15 A method of manufacturing a composite structure according to claim 14, wherein the tubular structure is structured so as to be radially expandable/shrinkable.

16 A method of manufacturing a composite structure according to claim 13, wherein the elastic wire is a metal wire.

17 A method of manufacturing a tubular composite structure, the method being characterized in that:

a tape-like composite structure is spirally lapped around the circumferential surface of a cylindrical support block and the overlapping parts of the tape-like composite structure are bonded,

wherein the tape-like composite structure comprises a polytetrafluoroethylene porous layers (A1) and (A2) and a framework structural member that has a plurality of gaps or openings, the framework structural member being arranged between the polytetrafluoroethylene porous layers (A1) and (A2), and wherein the polytetrafluoroethylene porous layers (A1) and (A2) are united together in close contact not only with each other through the gaps or openings of the framework structural member, but also with the framework structural member along the surfaces of the respective elements of the framework structural member in such a manner as to wrap the respective elements.